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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/079,101	05/14/1998	WILLIAM C. LYNCH	INT1P017	7998

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EXAMINER

AN, SHAWN S

ART UNIT PAPER NUMBER

2621

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/079,101

Applicant(s)

LYNCH ET AL.

Examiner

Shawn S. An

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/12/02.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-8,11-14,17-20,22-26 and 29-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 32 and 34 is/are allowed.
- 6) ☒ Claim(s) 1,2,5-8,11-14,17-20,22-26,29-31 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. As per Applicant's instructions as filed on 2/12/02, claims 1, 8, 14, 20, 25, and 32-34 have been amended, and claims 3-4, 9-10, 15-16, 21, and 27-28 have been canceled.

Response to Remarks

2. Applicant's arguments with respect to amended claims as above have been carefully considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Regarding claims 22 and 24, the phrase "may be" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
6. Claims 8, 12-13, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lei (6,130,911) in view of Liu et al (5,970,233) and Percival et al (5,991,816).

Regarding claim 8, Lei discloses a method of compressing video information comprising:

receiving a first and a second portions (blocks) of a video image (Fig. 4, see input arrow on top left);

transforming the first and the second portions of the image (64);

encoding the first and the second portions of the image (68); and

temporarily storing the encoded first and encoded second portion (78).

Lei does not seem to particularly disclose partially decoding the encoded first and second portions (blocks) for comparison with the decoded first portion from a corresponding video image in the transform domain to produce a resultant portion representing information from the first and second portions, and encoding the resultant portion to produce compressed video information, whereby a reduction in temporary storage is achieved a reverse transform need not be performed upon the first and second portions.

However, Liu et al teaches conventional concept of partially decoding the encoded blocks (Fig. 5, 503) and Percival et al teaches conventional concept of comparing portions (blocks) of corresponding video image in the transform domain to produce a resultant portion representing information from the first and second portions (Figs. 3 and 6), whereby a reverse transform need not be performed upon the blocks.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a method of compressing video information as taught by Lei to incorporate conventional concepts as taught by Liu et al and Percival et al so as to partially decode the encoded first and second portions (blocks) for comparison with the decoded first portion from a corresponding video image in the computationally efficient Haar transform domain to produce a resultant portion representing information from the first and second portions, and finally encoding the resultant portion to produce compressed video information, so that a reduction in temporary storage is achieved, whereby a reverse transform need not be performed upon the first and second portions.

Regarding claim 20, Lei discloses an integrated circuit for compression of video information, comprising:

- an incoming block storage unit (Fig. 1);
- a compression module for temporal compression of blocks of video information (Fig. 4, 76);
- temporary block storage for storage of compressed blocks (78);
- a comparison unit (80) for comparing decompressed blocks of a first video image with corresponding decompressed blocks from a corresponding second video image, and arranging to produce comparison information representing the first and second video images (col. 6, lines 15-35); and
- a compression unit (60) for compressing (via 84 to 60 to 66, 68, 70) the comparison information from the comparison unit to produce a compressed stream of bits representing first and second video images, wherein the compression unit transforms (64) and encodes (68) the blocks.

Lei does not seem particularly disclose partially decoding the compressed blocks, and a comparison unit for compares blocks in the transform domain, whereby a reverse transform need not be performed upon the blocks.

However, Liu et al teaches conventional concept of partially decoding the compressed blocks (Fig. 5, 503) and Percival et al teaches conventional concept of comparing blocks in the transform domain (Figs. 3 and 6), whereby a reverse transform need not be performed upon the blocks.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing an IC for compression of video information as taught by Lei to incorporate conventional concepts as taught by Liu et al for efficiently providing interim level video data and Percival et al for utilizing computationally efficient Haar transform.

Regarding claim 12, Percival et al teaches performing Haar comparison of the first and second portions (Figs. 3 and 6).

Regarding claim 13, comparing of such as video signals in a bit serial fashion is a concept conventionally utilized and well known in the art.

Therefore, it would have been obvious to perform comparison of decompressed blocks in a bit serial fashion such that the comparison is performed relatively fast as desired by its practicality.

7. Claims 1-2, 7, 14, 19, and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lei (6,130,911) in view of Percival et al (5,991,816).

Regarding claims 1 and 25, Lei discloses a (integrated circuit)/method for performing the following:

receiving a first and a second portions (blocks) of video information (Fig. 4, see input arrow on top left);

compressing, transforming, and encoding the first and the second portions (64, 66, 68);

temporarily storing the compressed first portion until a corresponding second portion (block) is received (78);

storing (70) the compressed, transformed, and encoded first and second portions;

compressing, transforming, and encoding the second portion (64, 66, 68);

storing the compressed second portion (78);

(decompressing and decoding) (82) the compressed first portion; and

(decompressing and decoding) (82) the second compressed portion for combination (86) with the decompressed (72, 74) first portion.

Note: decompressing and decoding have substantially the same meaning.

Note: compressing and encoding have substantially the same meaning.

Lei does not seem particularly disclose combining the first and second portions in the transform domain to produce a resultant portion representing information from the first and second portions in a compressed form, whereby the IC uses less temporally storage, and a reverse transform need not be performed upon the first and second portions.

However, Percival et al teaches conventional concept of combining the first and second portions (blocks) in a transform domain to produce a resultant portion

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representing information from the first and second portions (Figs. 3 and 6), whereby a reverse transform need not be performed upon the blocks.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing an IC for compression of video information as taught by Lei to incorporate conventional concepts as taught by Percival et al for utilizing computationally efficient Haar transform to combine the first and second portions in the transform domain to produce a resultant portion representing information from the first and second portions in a compressed form, so that the IC uses less temporally storage.

Regarding claim 14, Lei discloses a method of compressing video information, comprising:

- receiving a plurality of first portions (blocks) representing a first video image (Fig. 4, see input arrow on top left);

- temporarily compressing (76), transforming (64), and encoding (68) the first portions;

- temporarily storing the first portions until a second plurality of portions (block) from a second corresponding video image begin to arrive (78);

- compressing, transforming, and encoding the second portions (64, 66, 68);

- temporarily storing the compressed second portion (78);

- (decompressing and decoding) (82) the compressed first portion;

- (decompressing and decoding) (82) the second compressed portion for combination (86) with the decompressed (72, 74) first portion;.

Note: decompressing and decoding have substantially the same meaning.

Note: compressing and encoding have substantially the same meaning.

Lei does not seem particularly disclose comparing the first and second portions in the transform domain to produce a resultant portions representing the first and second video images, and compressing the resultant portion to produce compressed video information, whereby less temporary storage is needed and a reverse transform need not be performed upon the first and second portions.

However, Percival et al teaches conventional concept of combining/comparing the first and second portions (blocks) in a transform domain to produce resultant

portions representing the first and second video images, (Figs. 3 and 6), whereby a reverse transform need not be performed upon the blocks.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a method of compressing video information as taught by Lei to incorporate conventional concepts as taught by Percival et al so as to compressing the resultant portion to produce compressed video information so that less temporary storage is needed.

Regarding claims 2 and 26, Lei discloses compressing the portions into a stream of bits representing video information (70). Percival et al teaches the resultant portion as discussed above. Therefore, by virtue of combination of Lei and Percival et al concepts, it would have been obvious to compress the resultant portions into a stream of bits representing video information.

Regarding claims 7 and 19, comparing of such as video signals in a bit serial fashion is a concept conventionally utilized and well known in the art.

Therefore, it would have been obvious to perform comparison of decompressed blocks in a bit serial fashion such that the comparison is performed relatively fast as desired by its practicality.

8. Claims 5, 11, 17, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lei, Liu et al, and Percival et al as applied to claims 1, 8, and 20 above, respectively, and further in view of Goertzen (6,289,132 B1).

Regarding claims 5, 11, 17, and 22, the combination of Lei, Liu et al, and Percival et al does not particularly disclose transforming the blocks using a modified 2-6 Biorthogonal filter, whereby video information is compressed block by block without producing substantial blocking artifacts.

However, Goertzen teaches transforming blocks by using a conventional Biorthogonal filter (col. 14, lines 1-4).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing an IC for compression of video information as taught by Lei to incorporate the conventional concept as taught by Goertzen to utilize a modified 2-6 Biorthogonal

filter so that video information is compressed block by block, thereby preventing substantial blocking artifacts.

Regarding claim 23, since all of the claimed limitations are separately taught by Lei, Liu et al, Percival et al, and Goertzen, it would have been obvious for the Haar unit to partially decode the compressed blocks, and perform Haar comparison of the decoded blocks of the first and second images, and to encode the result of the Haar comparison to produce the comparison information.

Regarding claim 24, comparing of such as video signals in a bit serial fashion is a concept conventionally utilized and well known in the art.

Therefore, it would have been obvious to perform comparison of decompressed blocks in a bit serial fashion such that the comparison is performed relatively fast as desired by its practicality.

9. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lei and Percival et al as applied to claim 25 above, and further in view of Goertzen (6,289,132 B1).

Regarding claim 29, the combination of Lei and Percival et al does not particularly disclose transforming the first portion (block) using a modified 2-6 Biorthogonal filter, whereby video information is compressed block by block without producing substantial blocking artifacts.

However, Goertzen teaches transforming blocks by using a conventional Biorthogonal filter (col. 14, lines 1-4).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing an IC for compression of video information as taught by Lei to incorporate the conventional concept as taught by Goertzen to utilize a modified 2-6 Biorthogonal filter so that video information is compressed block by block, thereby preventing substantial blocking artifacts.

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10. Claims 6, 18, and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lei and Percival et al as applied to claims 1, 14, and 25 above, respectively, and further in view of Liu et al (5,970,233).

Regarding claims 6, 18, and 30, Lei discloses Haar basis (col. 8, lines 4-24) and encoding (Fig. 4, 68) the result of Haar basis to produce resultant portion. Further, Percival et al teaches performing a Haar comparison of the first and second portions (Figs. 3 and 6).

The combination of Lei and Percival et al does not particularly disclose partially decoding the first portion (block).

However, Liu et al teaches conventional concept of partially decoding the compressed blocks (portions) (Fig. 5, 503)

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing an IC for compression of video information as taught by Lei to incorporate conventional concepts as taught by Percival et al so as to encode the result of the Haar comparison to produce the resultant portion and Liu et al for efficiently providing interim level video data.

Regarding claim 31, comparing of such as video signals in a bit serial fashion is a concept conventionally utilized and well known in the art.

Therefore, it would have been obvious to perform comparison of decompressed blocks in a bit serial fashion such that the comparison is performed relatively fast as desired by its practicality.

11. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lei (6,130,911) in view of Koppelmans et al (5,544,266).

Regarding claim 33, Lei discloses an integrated circuit for decompressing video information, comprising:

a decompression unit (Fig. 5) that decompresses a compressed bit stream into a portion (block) of video information that that represents first and second video images (frames);

a reverse comparison unit (188) for receiving the portion of video information and producing decompressed blocks of the first video image and decompressed blocks from the second video image, both decompressed blocks in a transform domain (188);

a compression unit (190) for partially compressing the decompressed blocks of the first and second video images;

temporary block storage (192) for storage of the compressed blocks;

a decompression module (194) for transforming, decoding, and decompression of the compressed blocks that have been stored; and

an outgoing block storage unit (196).

Note: decompressing and decoding have substantially the same meaning.

Lei does not seem particularly disclose partially encoding/compressing the decompressed blocks.

However, Koppelmans et al teaches conventional concept of partially compressing the decompressed blocks (col. 7, lines 55-59).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing an IC for compression of video information as taught by Lei to incorporate conventional concept as taught by Koppelmans et al in order to allow a reduction in a temporarily storage.

Allowable Subject Matter

12. Claims 32 and 34 as amended are allowed.

Amended independent claims 32 and 34 recite novel features, wherein the prior art of record fails to anticipate or make obvious the novel (amended) features.

Accordingly, if all of the rejected claims are canceled, the application would be placed in condition for allowance.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

15. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to *Shawn S. An* whose telephone number is 571-272-7324.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SHAWN AN
PRIMARY EXAMINER

4/15/06